Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 4 March, 1902 No. 39

IVY POISONING AND ITS TREATMENT.

Franz Pfaff, M. D. Ph. D.

Of all the cutaneous eruptions caused by poisoning plants, those produced by poison ivy and by poison sumach are probably the most common in this country.

It is the general belief of the public and of most physicians, that the eczematous conditions, which occur in many persons after handling such plants may be caused also by emanations from the plant, the active principle being thought to be a volatile substance.

The two attempts to isolate the active principle failed. One of the investigators, J. Khittel, attributed the action of poison ivy to a volatile alkaloid, the other, John M. Maisch, denied it, stating that a volatile acid, which he called "toxicodendric acid" is the active principle.

Both statements proved to be erroneous, as experiments, which I made a few years ago, have shown.

The lack of any rational treatment of ivy poisoning may be ascribed to the imperfect knowledge of the cause of this disease.

In my researches (v. Journal of Exper. Med. Vol. II. No. II. 97.) I used different parts of the plants, gathered at different seasons of the year and found, that the so-called "toxicodendric acid," which Maisch did not produce in the chemically pure state, is nothing but acetic acid and therefore not the cause of the eruption peculiar to ivy poisoning.

Further investigations showed that the active principle is an oil, which I named "Toxicodendrol" and which can be found in all parts of the plants, both in *Rhus toxicodendron* and *Rhus venenata*. This oil is easily soluble in alcohol, ether, chloroform, etc., but is insoluble in water. Toxicodendrol is easily decomposed by heat, but

very slowly at ordinary temperatures. A sample of it, which had been kept in an open porcelain dish for over 13 months, was partly converted into resin, but the remaining oil proved to be just as active as before. The active oil was also prepared from plants collected during the winter after having been covered with snow for weeks and from dry stems and branches which had been kept in the laboratory for over a year.

To test the strength of the "Toxicodendrol" I made many experiments and found the oil active in the minutest quantities; in one case as little as $\frac{1}{1000}$ mg. of the oil dissolved in 2 drops of olive oil proved effective.

The time of incubation varied from 18 hours to 9 days. This long period of incubation and the stability of the oil explain the belief, that direct contact is not necessary to contract the disease. When the first symptoms appear, several days have usually passed and a person may then not remember having come in contact with the plant. On the other hand some of the oil may stick to the clothing etc. and this may cause the disease even after several months have elapsed. In making these experiments I handled more than 25 kg. of the plants, and several hundred persons passed through the laboratory, where these experiments were made, but not one of those who did not come in direct contact with the plants or the free oil was poisoned.

It seems possible that poisoning might be caused by small particles of the plant, such as pollen and the hairs from the leaves, being carried through space by the wind and thus brought in contact with the skin or clothing, for as above stated, the oil is contained in all parts of the plant and even the hairs of the leaves may be seen under the microscope to contain oil.

Having defined the properties of "Toxicodendrol" we may now outline the rational treatment of ivy poisoning. As we have seen Toxicodendrol is not a volatile oil, but on the contrary is very stable, we must endeavor to remove it as quickly as possible and prevent its spreading.

This can be done by vigorously washing the affected and exposed parts with soap and water and a scrubbing brush; that is to say by mechanically removing the oil. As the active principle is very soluble in alcohol and gives with lead acetate a precipitate which is nearly insoluble in alcohol, other processes may be employed to remove the oil. The exposed parts may be washed repeatedly with

fresh quantities of alcohol and a scrubbing brush. The poisonous oil may be thus removed in alcoholic solution. Another way of proceeding would be to wash the exposed parts with an alcoholic solution of lead acetate; in this case the poisonous principle would be first transformed in its insoluble lead compound and then washed away with alcohol.

The washing must be done thoroughly when alcohol is employed, as otherwise the alcohol might only serve to distribute the oil more widely over the skin. The finger nails should be cut short and also perfectly cleaned with the scrubbing brush. Oily preparations, or anything which dissolves the poisonous oil, if used, should be immediately removed, as they may only spread the poison, giving it a larger area on which to work.

The treatment above outlined can not cure the already inflamed parts which must heal by the usual process of repair, but it does prevent the spreading of the inflammation and may serve to remove the poison before it has had time to produce its characteristic effects upon the skin.

Harvard Medical School, Boston.

NOTES ON SPOROBOLUS.[1]

Elmer D. Merrill.

Sporobolus depauperatus (Torr.) Scribn. Bull. Torr. Bot. Club. **10**: 63. 1883.

Vilfa squarrosa Trin. Agrost. **1**: 78. 1840.

Vilfa depauperata Torr. in Hook. Fl. Bor. Am. **2**: 257. *t.* 236. 1840.

There has been little confusion regarding this species owing to the fact that Hooker's excellent plate leaves no doubt as to the identity of the species. In the field this species is very distinct and at once recognized by its densely tufted habit, and prostrate culms which are seldom 1 dm. high, and much stouter than in *Sporobolus richardsonii*.

The type locality of *Vilfa depauperata* is "Hab. N. W. America,

[1] See also Nash, Bull. Torr. Bot. Club, **22**: 464, 465, Bot. Gaz. **21**: 155; Scribner, Bot. Gaz. **21**: 14, 15.